BOROUGH OF KENDAL

ANNUAL REPORT

OF THE

Medical-Officer-of-Health,

FOR THE

YEAR ENDING DECEMBER 31, 1897

BY

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1898.

BOROUGH OF KENDAL.—1897.

Table of Death-rates from All Causes, from Phthisis and Infectious Diseases, since the passing of the Registration Act, 1837.
This Tabulation was begun by the late Dr. David Page.

Year	Estimated Population June 30th	Deaths from			Annual Rate of Mortality per 1000 from				Percentage to total Deaths of Deaths from		Deaths from									Meteorology	
		All Causes	Phthisis (Consumption)	Seven principal Zymotic Diseases	All Causes	Corrected for Age and Sex distribution	Phthisis	Seven principal Zymotic Diseases	Phthisis	Seven principal Zymotic Diseases	Smallpox	Measles	Scarlet Fever	Diphtheria and Membranous Croup	Whooping Cough	Typhus Fever	Typhoid Fever or Enteric Fever	Other Fevers	Diarrhœa and Dysentery	Mean Temperature of the Air	Rainfall in Inches
1838	11800	339	68	54	28·7	..	5·8	4·0	20·0	15·9	35	..	..	..	7	..	..	11	1	44·81	45·739
1839	11800	414	51	149	35·1	..	4·3	12·6	12·3	36·0	19	..	97	..	8	3	..	20	2	46·09	57·965
1840	11800	343	56	83	29·1	..	4·7	7·0	16·3	24·2	7	34	16	..	..	13	..	11	2	46·03	48·227
1838-40		365·3	58·3	95·3	31		4·9	7·9	16·2	25·4	20·3	11·3	37·6	..	5	5·3	..	14	1·7	45·643	50·644
1841	11800	264	48	22	22·4	..	4·1	1·9	18·1	8·3	..	..	4	..	14	2	..	1	1	46·17	53·854
1842	11800	268	47	34	22·8	..	4·0	2·9	17·5	12·7	..	..	5	..	..	17	..	12	..	47·01	48·072
1843	11800	286	64	26	24·2	..	5·4	2·2	22·0	9	..	5	..	..	..	12	..	4	5	46·86	56·307
1844	11800	309	37	35	26·2	..	3·0	2·9	12·0	11·3	..	22	..	..	..	7	..	2	4	45·58	43·012
1845	11800	336	52	53	28·5	..	4·4	4·5	15·5	15·7	37	..	3	..	..	6	..	4	3	45·47	53·346
1841-45		292·6	49·6	34	24·8		4·2	2·9	17·0	11·4	7·4	5·4	2·4	..	2·8	8·8	..	4·6	2·6	46·218	50·918
1846	11800	427	56	99	36·2	..	4·7	8·4	13·1	23·2	7	3	23	..	1	40	..	14	11	48·44	52·365
1847	11800	370	57	73	31·4	..	4·8	6·2	15·4	19·7	..	..	47	..	..	16	..	5	5	46·67	52·197
1848	11800	340	53	26	28·8	..	4·5	2·4	15·5	8·2	..	9	1	..	..	10	..	2	4	46·32	56·314
1849	11800	276	33	30	23·4	..	2·8	2·5	11·9	10·8	..	2	..	..	2	13	..	8	7	46·62	48·068
1850	11800	239	25	16	20·2	..	2·1	1·3	10·4	6·7	..	..	..	..	5	6	..	3	2	46·64	49·576
1846-50		330·4	44·8	69·2	28		3·8	4·2	13·2	13·7	1·4	2·8	14·2	..	1·6	17	..	6·4	5·8	46·938	51·704
1851	11800	310	42	57	26·2	..	3·5	4·8	13·5	18·3	..	6	35	..	..	5	..	4	7	46·35	47·561
1852	11900	283	27	62	23·8	..	2·2	5·2	9·5	21·9	1	..	44	..	..	9	..	2	6	47·55	65·354
1853	11900	250	38	30	21	..	3·2	2·5	15·2	12·0	1	..	5	..	12	5	..	2	5	45·56	39·455
1854	12150	243	37	20	20	..	3·1	1·7	11·1	8·2	9	..	3	..	1	1	..	3	3	46·68	46·133
1855	12000	259	29	52	21·6	..	2·4	4·3	11·2	20·1	1	34	3	..	..	11	..	1	2	45·98	34·54
1851-55		269	34·6	44·2	22·5		2·9	3·7	12·1	16·1	2·4	8	18	..	2·6	6·2	..	2·4	4·6	46·42	46·608

						..	2·6	5	13·6	2·5	..	1	..	..	3	2	..	..	..	45·903	57·004
1856-60		251·2	35·2	25·6	20·8		2·9	2·1	14	9·5	1·6	7·4	2	..	4·2	6·6	1	1·8	1	48·079	44·701
1861	12070	239	22	17	19·8	..	1·8	1·4	9·2	7·1	..	6	..	1	2	1	1	2	4	47·82	60·697
1862	12200	325	35	63	26·6	..	2·9	5·2	10·8	19·4	..	3	46	..	7	3	1	1	2	47·70	54·407
1863	12350	257	30	23	20·8	..	2·3	1·9	11·7	8·9	..	..	9	..	6	4	..	2	2	48·357	54·919
1864	12500	255	40	10	20·4	..	3·2	·8	15·7	3·9	1	1	..	..	1	..	2	..	5	46·865	47·571
1865	12600	307	36	33	24·3	..	2·8	2·6	11·7	10·7	..	6	1	..	1	7	..	5	13	48·294	42·669
1861-65		276·6	32·6	29·2	22·4		2·6	2·4	11·8	10	·2	3·2	11·2	·2	3·4	3	·8	2	5·2	47·807	52·052
1866	12900	269	38	28	21	..	3·0	2·2	14·1	10·4	..	4	..	..	8	5	3	3	5	48·125	60·393
1867	12900	322	29	74	25	..	2·2	5·7	9	23	..	18	47	1	1	3	..	1	3	47·277	47·305
1868	13100	261	36	34	19·9	..	2·9	2·6	13·8	13	..	4	15	..	..	1	3	..	11	49·077	52·745
1869	13200	277	37	11	20·9	..	2·8	·8	13·3	4	..	1	3	..	1	..	1	2	3	47·508	55·498
1870	13400	337	49	47	25·2	..	3·7	3·5	14·5	13·9	..	20	1	1	12	..	2	1	10	48·32	43·09
1866-70		293·2	37·8	38·8	22·4		2·9	2·9	12·9	12·8	..	9·4	13·2	·4	4·4	1·8	1·8	1·4	6·4	48·061	51·806
1871	13453	263	37	13	19·5	..	2·7	·9	14·1	4·9	..	..	..	..	5	..	2	2	4	47·81	50·245
1872	13477	260	24	27	19·2	..	1·7	2·0	9·2	10·4	2	1	..	..	12	..	7	3	2	49·81	69·178
1873	13502	263	29	13	19·4	..	2·1	·9	10·6	4·9	..	..	..	2	3	..	2	1	5	48·322	49·365
1874	13527	302	22	42	22·3	..	1·6	3·1	7·3	13·9	..	17	6	6	6	..	5	..	2	47·98	55·105
1875	13551	272	32	15	20·0	..	2·3	1·1	11·7	5·5	..	..	1	2	7	..	1	..	4	48·645	46·22
1871-75		272	28·8	22·0	20·3		2·1	1·6	10·5	7·9	4	3·6	1·4	2	6·6	..	3·4	1·2	3·4	48·513	54·022
1876	13577	259	17	14	19·0	..	1·2	1·0	6·5	5·4	4	..	2	..	..	..	2	..	6	48·43	51·885
1877	13602	225	31	22	16·5	..	2·2	1·6	13·7	9·7	..	14	3	..	2	..	..	..	3	47·784	65·775
1878	13627	305	32	19	22·3	..	2·3	1·4	10·4	6·3	..	..	..	..	7	..	5	..	7	47·84	43·758
1879	13652	253	41	5	18·5	..	3·0	·3	16·2	2	..	1	1	..	1	..	..	..	2	44·41	43·18
1880	13677	333	44	91	24·3	..	3·2	6·6	10·2	27·3	..	20	56	1	5	..	7	..	2	48·188	45·06
1876-80		275	33	30·2	20·1		2·3	2·1	11·4	10·1	·8	7	12·4	·2	3	..	2·8	..	4	47·33	49·931
1881	13702	255	29	15	18·6	..	2·1	1·0	11·7	5·8	1	1	6	3	..	..	3	..	1	45·524	59·77
1882	13779	265	34	17	19·2	..	2·5	1·2	12·8	6·4	..	1	5	2	1	..	5	..	3	47·448	59·82
1883	13848	253	42	16	18·2	..	3·0	1·1	16·6	6·3	..	4	..	..	2	..	2	..	8	47·187	51·51
1884	13922	272	43	42	19·6	..	3·0	3·0	15·8	15·4	..	9	..	1	..	..	19	..	13	48·238	44·47
1885	13996	256	36	17	18·2	..	2·5	1·2	14	6·6	..	2	..	1	11	..	..	..	3	45·36	45·83
1881-85		260	36·8	21·4	18·7		2·6	1·5	14·2	8·1	·2	3·4	2·2	1·4	2·8	..	5·8	..	5·6	46·751	52·28
1886	14071	228	37	10	16·2	..	2·6	·7	16·2	4·6	..	..	2	..	3	..	1	..	4	46·444	53·98
1887	14145	260	38	11	18·3	..	2·6	·7	14·6	4·6	..	..	..	3	2	..	1	..	5	46·712	32·37
1888	14221	243	19	18	17·0	..	1·3	1·2	7·8	7·4	1	3	2	8	..	..	4	..	..	45·964	43·04
1889	14296	313	25	31	21·1	..	1·7	2·2	7·9	9·9	..	19	..	2	1	..	3	..	6	46·020	43·15
1890	14373	253	21	15	17·6	..	1·4	1·0	8·3	5·9	..	..	..	3	2	..	4	..	6	45·396	48·13
1886-90		259	28	17	18·0		1·9	1·1	10·9	6·4	·2	4·4	·8	3·2	1·6	..	2·6	..	4·2	46·105	44·134
1891	14449	282	25	14	19·5	19·8	1·7	·9	8·8	4·8	..	2	..	..	.	..	2	2	8	47·5	53·17
1892	14526	284	26	28	19·5	19·8	1·8	1·9	9·1	9·8	..	20	..	1	4	..	..	1	3	45·88	55·75
1893	14603	233	15	31	15·9	16·1	1·0	2·1	6·4	13·3	..	2	4	2	3	..	5	..	15	50·184	45·79
1894	14680	233	19	23	15·9	16·1	1·2	1·5	7·7	9·8	..	..	5	1	1	..	2	..	14	47·375	54·11
1895	14759	269	12	43	18·2	18·5	·8	2·9	4·4	15·9	..	23	..	..	7	..	1	..	12	46·846	47·92
1891-95		260	19	27	17·8	18·0	1·3	1·8	7·2	10·7	..	9·4	1·8	·8	3	..	2	·6	10·4	47·557	51·34
1896	14837	208	20	11	14·01	14·23	1·34	·74	9·6	5·2	..	..	1	1	2	..	2	..	5	48·532	48·09
1897	14907	249	11	31	16·70	16·96	·73	2·07	4·4	12·4	..	7	..	5	9	..	1	..	9	48·897	54·64

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NOTES TO ACCOMPANY THE BOROUGH MORTALITY TABLE.

From all Causes, Phthisis, and Infectious Diseases. since the passing of the Registration Act, 1837.

SMALL-POX.

1.—*Epidemic* in 1838-9. The death of a child aged 5 years occurred on the 19th January, in Stricklandgate ; but the outbreak would appear to have commenced in October, when the death of an infant, six months old, was recorded on the 7th of that month in Allhallows Lane, and to have continued until March, 1839, the last death being on March 10th, of a man aged 40, residing in Branthwaite Brow. Of the 54 deaths 16 were under 1 year, 18 between 1 and 5 years, 17 between 5 and 20 years, 3 above 20 years.

2.—*Epidemic* in 1845-46. A child aged 5 years died on February 3rd in Stricklandgate, and two other deaths occurred in March, but the chief fatality occurred in the months of November and December, and the last death on the 3rd June, 1846. Of the 44 deaths, 8 were under 1 year, 19 between 1 and 5 years, 7 between 5 and 20 years, 10 of 20 years and upwards.

3.—Small outbreak in 1888, commencing with importation of the disease from Lancashire and Yorkshire, where it was epidemic.

MEASLES.

Epidemic in 1840, 1844, 1855, 1859, 1867, 1870, 1874, 1877, 1880, 1884, 1888, 1889, 1892, and 1895. (The epidemic in 1884, though a very extensive one indeed, causing the closure of three schools, was of a mild type ; it ran its course during the period of the enteric-fever outbreak of the same year, and ceased in the month of May).

SCARLET-FEVER.

1.—*Epidemic* in 1839-42. It commenced in May, 1839, reached its height in the last week of October and the beginning of November, and subsided in February, 1840. Of the 113 deaths, 87 were below 5 years, 23 between 5 and 10 years, 3 between 10 and 20 years.

2.—*Epidemics* in 1846-47, 1851-52, 1862-63, 1867-68, and 1880. (The building of an infectious diseases hospital for the Borough was determined on after the epidemic of 1889, and was first used in September, 1882, when scarlet-fever patients were admitted).

3.—An outbreak in 1893, but of a mild type.

4.—An outbreak in 1894, again of a mild type. Commenced in the first week in July, attained its height in the week ending 13th October (twenty-two cases notified in that week), and gradually diminished, seven cases only being notified in the last fortnight in the year.

DIPHTHERIA.

The absence of any deaths certified from this disease before the year 1861 may be due to such deaths having been included under the common appellation of Croup.

1.—*Epidemic* in first two months of 1888, during and after a dense fog which hung over the town from January 8th to 20th.

WHOOPING-COUGH.

High mortalities in the years 1841, 1853, 1858-59, 1862-63, 1870, 1872, 1885, and 1897. (The prevalence of this disease in 1885 was during the last eight months of the year. The eleven deaths were all of infants under five years of age, as also were the three deaths in 1886, and the two deaths in 1887).

FEVER.

1.—This term includes all forms of continued fever. The death-rate was almost annually heavy up to 1860 ; since that date there has been a very perceptible decline—Waterworks Company in 1849 ; Main Sewage Works completed by the end of 1873). As typhoid or enteric-fever was not distinguished from typhus-fever until 1840-41, and not generally in England before 1851, most of the deaths appearing under the column of typhus fever may be presumed to have been typhoid or enteric-fever. The first return of death from this latter disease was in 1856, and no return of typhus-fever has been made since 1868. The death rate under typhus-fever was annually constant from 1839 to 1863 ; and from 1868, since when no such return has been made, the mortality from enteric-fever has been continuous, except in the years 1877, 1879, 1885 and 1892.

The *constant prevalence* of fever was greatly accentuated in the years 1839-40, 1842-43, 1846-47, 1849, and 1858. The absence of mortality under record "other fevers" since 1873, tends to the belief that such returns formally should have been made as of enteric-fever. The decrease of mortality from fever (including typhus, enteric and others) may be gathered from the following table :—

Period of years ...	1839-40	1841-45	1846-50	1851-55	1856-60	1861-65
Mortality ...	58	67	117	43	47	29
Period of years ...	1866-70	1871-75	1876-80	1881-85	1886-90	1891-95
Mortality ...	25	23	14	29	13	10

2.—From January to April, 1884, inclusive, there was a serious outbreak of enteric fever, affecting solely the north end of the town, due apparently to a curious combination of meteorological circumstances, with an inadequate ventilation of the main sewer in that district, and individual instances of faulty house-drain connections.

3.—A considerable outbreak in 1893, mainly between the middle of August and the middle of October, following a long period of exceptionally dry weather, during which the town was supplied with water from the river Mint, the amount supplied being also deficient.

DIARRHŒA.

An almost constant small annual mortality.

Exceptional. 1.—In 1846 during fatal epidemic of so-called "typhus fever."

2.—In 1865, 1868, 1870, and in 1884, during exceptional heat in July and August. In 1884 the exceptional heat continued into September, and was accompanied by mortality.

3.—No diarrhœa mortality in the year 1888, the first time in twenty-eight consecutive years.

4.—Diarrhœa was prevalent in August and September, 1893, hot weather with showers following a very long period of drought.

CHOLERA.

No registered return. The last epidemic in this county was during 1831-32, and therefore before the passing of the Registration Act.

BOROUGH OF KENDAL.

Annual Report of the Medical-Officer-of-Health for the year ending December 31st, 1897.

Area...	2,622 Acres
Population (census 1891)	14,430
Inhabited houses	2,952
Average population per house	4·88

ESTIMATE OF POPULATION.

	Under 5 yrs.	Under 15 yrs.	Under 25 yrs.	Under 65 yrs.	Over 65 yrs.	All Ages.	
Population estimated on June 30th, 1897—							
Males	907	1653	1328	2869	349	7106	14,916
Females	914	1721	1567	3172	436	7810	
Recorded death-rates per 1000 estimated to be living in age period	43·25	4·17	2·41	9·94	108·28		

BIRTHS	Males	162	persons 378
	Females	216	

Annual Rate of Births per 1000 of the population, 25·.35

DEATHS	Males	122	persons 249
	Females	127	

Annual Rate of Mortality per 1,000	Males	17·17	persons 16·70
	Females	16·27	

But corrected for age and sex distribution, 16·96.

Excess of Registered Births over Deaths, 129.
Estimated increase of population, 79.

GENERAL MORTALITY IN 1897.

The total number of deaths registered in the year 1897 was 249. This is after deducting the deaths of non-residents who died within the Borough, and adding the deaths of those residents who died in other places. Estimating the population at 14,916, this is equal to a death-rate of 16·70 per 1000 of the population, or corrected for age and sex distribution, 16·96 per 1000.

ZYMOTIC MORTALITY.

The number of deaths from zymotic diseases, including diarrhœa, was 31, and this is equal to a death-rate of 2·07 per 1000 of the population.

MORTALITY FROM PHTHISIS.

The number of deaths due to phthisis was 11, or equal to a rate of ·73 per 1000.

ANALYSIS OF THE DEATH-RATE.

Infant Mortality.

Of the total number of deaths, 60 or 24·09 per cent. were under one year.

The deaths of children under one year were at the rate of 158 per 1000 births.

DEATHS OF INFANTS UNDER ONE YEAR, PER 1000 BIRTHS.

1886-90	1891-95	1891	1892	1893	1894	1895	1896	1897
134	137	144	120	130	129	165	96	158

CHILD MORTALITY.

Eighty-three deaths, or 33·3 per cent. of the total deaths, were of children under five years of age, being at the rate of 5·5 per 1000 of the population.

DEATH-RATES UNDER FIVE YEARS PER 1000 OF THE POPULATION.

1886-90	1891-95	1891	1892	1893	1894	1895	1896	1897
5·9	5·6	5·9	5·5	5·6	4·5	6·9	3·8	5·5

DEATH-RATE UNDER FIVE YEARS PER 1000 ESTIMATED TO BE LIVING AT THAT AGE-PERIOD.

1891-95	1892	1893	1894	1895	1896	1897
47·1	45·9	46·3	37·4	57·1	31·4	43·25

The following table gives the number of deaths of children under one year and under five respectively :—

Year.		No. of deaths under one year.		No. of deaths between one and five years.
1881-85	...	mean 57·4	...	31·2
1886-90	...	mean 56·8	...	27
1891-95	...	mean 58·2	...	25·6
1891	...	65	...	21
1892	...	50	...	31
1893	...	56	...	26
1894	...	50	...	17
1895	...	70	...	33
1896	...	38	...	19
1897	...	60	...	23

ADULT MORTALITY.

The number of deaths between five and sixty-five years of age was 81, being at the rate of 5·4 per 1000 of the total population, at the rate of 6·5 per 1000 estimated to be living at that age-period, and constituting 32 per cent. of the deaths at all ages.

Death-rate per 1000 of the population estimated to be living at that age-period :—

1893	1894	1895	1896	1897
7·3	8·1	7·6	7·7	6·5

OLD-AGE MORTALITY.

The number of deaths of persons of sixty-five years of age and upwards was 85, being at the rate of 5·7 per 1000 of the total population, 108·2 per 1000 estimated to be living at that age-period, and constituting 34·1 per cent. of the deaths at all ages.

Death-rate per 1000 of the population estimated to be living at that age-period :—

1893	1894	1895	1896	1897
82·4	89·4	93·8	71·6	108·2

TABLE I.

The following table gives the Recorded Annual Death Rates per 1000 from All Causes, and from the several Zymotic Diseases during the year 1897.

	All Causes. (1)	Principal Zymotic Diseases. (2)	Small-pox. (3)	Measles. (4)	Scarlet Fever. (5)	Diphtheria. (6)	Whooping Cough. (7)	Fever. (8)	Diarrhœa. (8)	Deaths under one year per 1000 Births. (10)
England and Wales	17·4	2·15	0·00	0·40	0·14	0·24	0·35	0·16	0·86	156
33 Great Towns	19·1	2·87	...	0·55	0·18	0·31	0·41	0·18	1·24	177
67 other Large Towns	17·2	2·41	...	0·43	0·15	0·24	0·38	0·16	1·05	169
Rural England and Wales	16·4	1·62	...	0·29	0·12	0·19	0·31	0·14	0·57	138
County of Westmorland	13·9	0·91	..	0·13	0·00	0·20	0·34	0·03	0·21	113
Borough of Kendal	16·7	2·079	...	0·46	0·00	0·13	0·60	0·06	0·60	158
Rural District of S. Westmorland...	12·4	0·55	...	0·00	0·00	0·20	0.15	0·05	0·15	81

TABLE II.

1897. Quarter ending.	Births Regd.	Births per 1000 of population.	Percentage of Deaths under 1 year to		Percentage of Deaths between 1 and 5 years to		Percentage of Deaths under 5 years to	
			Total Deaths.	Births.	Total Deaths.	Births.	Total Deaths in year.	Births in year.
March 31	93	6·23	23·61	18·27	9·72	7·52	33·33	25·80
June 30	98	6·57	22·64	12·24	3·77	2·04	26·41	14·28
September 30 ...	100	6·70	31·94	23·00	11·11	8·00	43·04	31·00
December 31 ...	87	5·83	15·38	9·19	11·53	6·89	26·92	16·09
Totals	378	25·33	...	...	...	...	129·70	87·17
Means	...	...	23·39	15·67	9·04	6·11	...	...

TABLE III.

Quarterly distribution of mortality at all age-periods and from Lung and Zymotic Diseases.

Quarter ending.	Number of Deaths in each age-period.						Total Deaths	Death Rate per 1000	Percentage to total deaths of Deaths from	
	under 1 year	under 5 years	under 15 years	under 25 years	under 65 years	over 65 years			Lung Disease	Zymotic Disease
March 31 ...	17	7	4	2	19	23	72	19·31	5·55	16·66
June 30 ...	12	2	1	2	17	19	53	14·22	9·43	1·88
September 30 ...	23	8	7	2	12	20	72	19·31	9·72	19·44
December 31 ...	8	6	2	1	12	23	52	13·95	21·15	7·69
Totals ...	60	23	14	7	60	85	249	...	...	...
Means ...	...	...	...	...	...	...	...	16·70	11·46	11·41

TABLE IV.

Quarterly Distribution of deaths from Zymotic Diseases.

Quarter	Seven Principal Zymotic Diseases.		Small-pox.		Measles.		Scarlet Fever		Whooping Cough.		Enteric Fever.		Diphtheria and Membranous Croup.		Diarrhœa and Dysentery.		Total.
	−5	5+	−5	5+	−5	5+	−5	5+	−5	5+	−5	5+	−5	5+	−5	5+	
March	12	...	...	...	7	...	...	...	5	...	...	...	...	...	...	...	12
June	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
September ...	13	1	...	...	...	...	...	...	2	...	...	1	2	...	9	...	14
December ...	3	1	...	...	...	...	...	...	1	...	...	...	2	1	...	...	4
Totals ...	29	2	...	...	7	...	...	...	9	...	...	1	4	1	9	...	31

TABLE V.

METEOROLOGY, with special Mortalities in parallel column. Observer—R. J. NELSON, Esq. Ivy Garth, Kendal.

1897.	BAROMETER.					THERMOMETER.							RAINFALL.				DEATHS FROM			
	Highest Reading inches	Day of Month.	Lowest Reading. inches	Day of Month.	Mean Reading. inches	Highest Reading. °F	Day of Month.	Lowest Reading. °F	Day of Month.	Mean Reading. °F	No. of days on which 32° or less has been registered.	Prevailing Wind.	Total. inches	Maximum fall registered in 24 hourly period by 5 in. gauge. inches	Day of Month.	No. of days on which 0·1 in. or more fell. inches	All Causes.	Phthisis and Lung Disease.	Zymotic Disease.	Nature of such Zymotic Disease.
January ..	30·200	2	29·100	30	29·687	46	27	14	24	34·419	21	N	1·04	·86	24	5	21	2	2	Measles & Whooping Cough.
February ..	30·3000	16	29·050	2	29·803	56	22	26	1	41·660	7	SW	4·65	·90	4	17	24	1	5	Measles & Whooping Cough.
March ..	29·850	8	28·800	5	29·353	57	24	26	30	43·371	5	SW	8·36	·82	13	25	28	5	5	Measles & Whooping Cough.
April ..	30·050	23	29·000	1	29·607	69	27	27	1	46·516	9	NE	3·94	·82	13	11	18	2	1	Whooping Cough.
May ..	30·250	16	29.200	27	29·772	73	16	31	12	51·935	2	NE	2·25	·46	28	12	19	4	0	
June ..	30·050	12	29·200	27	29·817	84	13	40	19	56·433	..	NE	3·45	·53	19	16	16	2	0	
July ..	30·200	11	29·500	20	29·827	89	15	42	8	61·758	..	SW	1·61	·39	20	12	27	5	4	Diphtheria & Whooping Cough
August ..	30·000	3	29·250	21	29·548	89	2	44	19	61·100	..	SW	5·33	·60	21	22	30	5	7	Diarrhœa.
September	30·350	13	29·000	2	29·763	70	13	35	17	53·166	..	SW	6·10	1·24	24	15	15	0	3	Enteric Fever & Diarrhœa.
October ..	30·400	22	29·150	16	29·938	72	29	29	13	48·693	3	N	2·92	1·02	14	9	14	3	0	
November	30·500	21	29·200	13	29·950	70	2	28	16	47·666	3	SW	7·20	2·85	12	14	22	7	2	Membranous Croup.
December..	30·400	22	28·750	30	29·584	54	7	20	25	39·048	11	SW	8·79	1·11	7	22	15	4	2	{ Membranous Croup and Whooping Cough.
Totals ..	..	..	..	..	..	..	..	..	..	..	61	..	54·64	..	..	180	249	40	31	
Means ..	30·220	..	29·180	..	29·720	69	..	30	..	48·897	..	..	..	..	..	..	..	..	..	

TABLE VI.

DISEASES OF THE RESPIRATORY ORGANS.

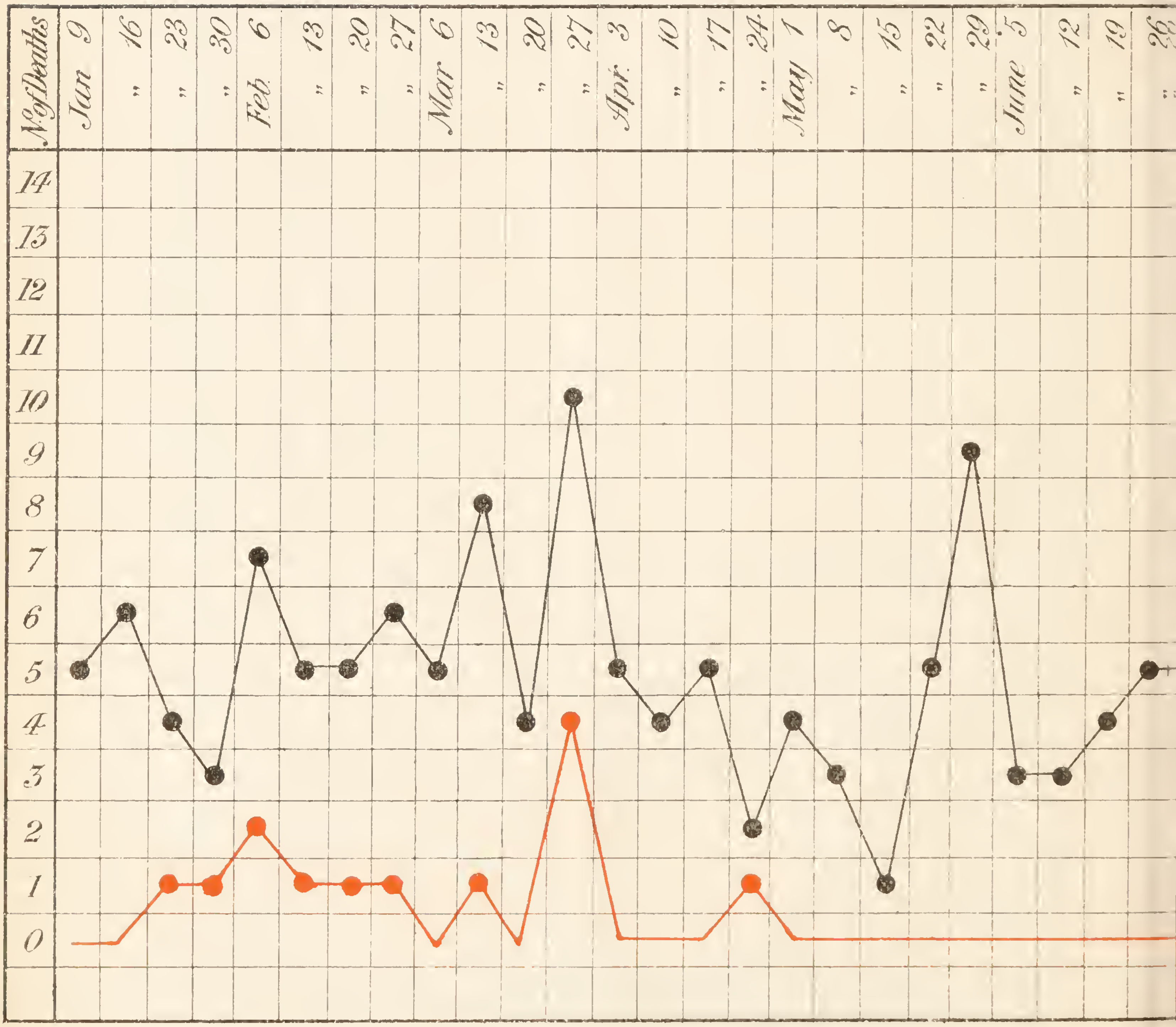
Deaths at age periods from these diseases, with mean temperature and rainfall in each month of the year.

Month.	Mean Temperature °F.	Rainfall in inches.	From Phthisis.		From Bronchitis.		From Pneumonia		From Pleurisy.		From Asthma.		Total.	
			under 5	over 5	under 5	over 5	under 5	over 5	under 5	over 5	under 5	over 5	under 5	over 5
January	34·419	1·04	...	...	...	2	...	...	...	...	...	...	...	2
February	41·660	4·65	...	1	...	...	...	...	...	...	...	...	...	1
March	43·371	8·36	...	2	1	2	...	...	...	...	...	...	1	4
April	46·516	3·94	...	...	...	...	1	...	...	...	...	1	1	1
May	51·935	2·25	...	1	...	2	1	...	...	...	...	...	1	3
June	56·433	3·45	...	1	1	...	...	...	...	...	...	...	1	1
July	61·758	1·61	..	2	1	2	...	...	...	...	...	...	1	4
August	61·100	5·33	...	1	2	1	...	...	...	1	...	...	2	3
September	53·166	6·10	...	...	...	...	...	...	...	...	...	...	...	...
October	48·693	2·92	...	1	...	1	1	...	...	...	...	...	1	2
November	47·666	7·20	...	1	3	1	1	..	...	...	...	1	4	3
December	39·048	8·79	...	1	1	1	...	1	...	...	...	...	1	3
Totals	...	54·64	...	11	9	12	4	1	...	1	...	2	13	27
Means	48·897	...	...	...	...	...	...	...	...	...	...	...	...	...

BOROUGH

1897 — DEATHS;

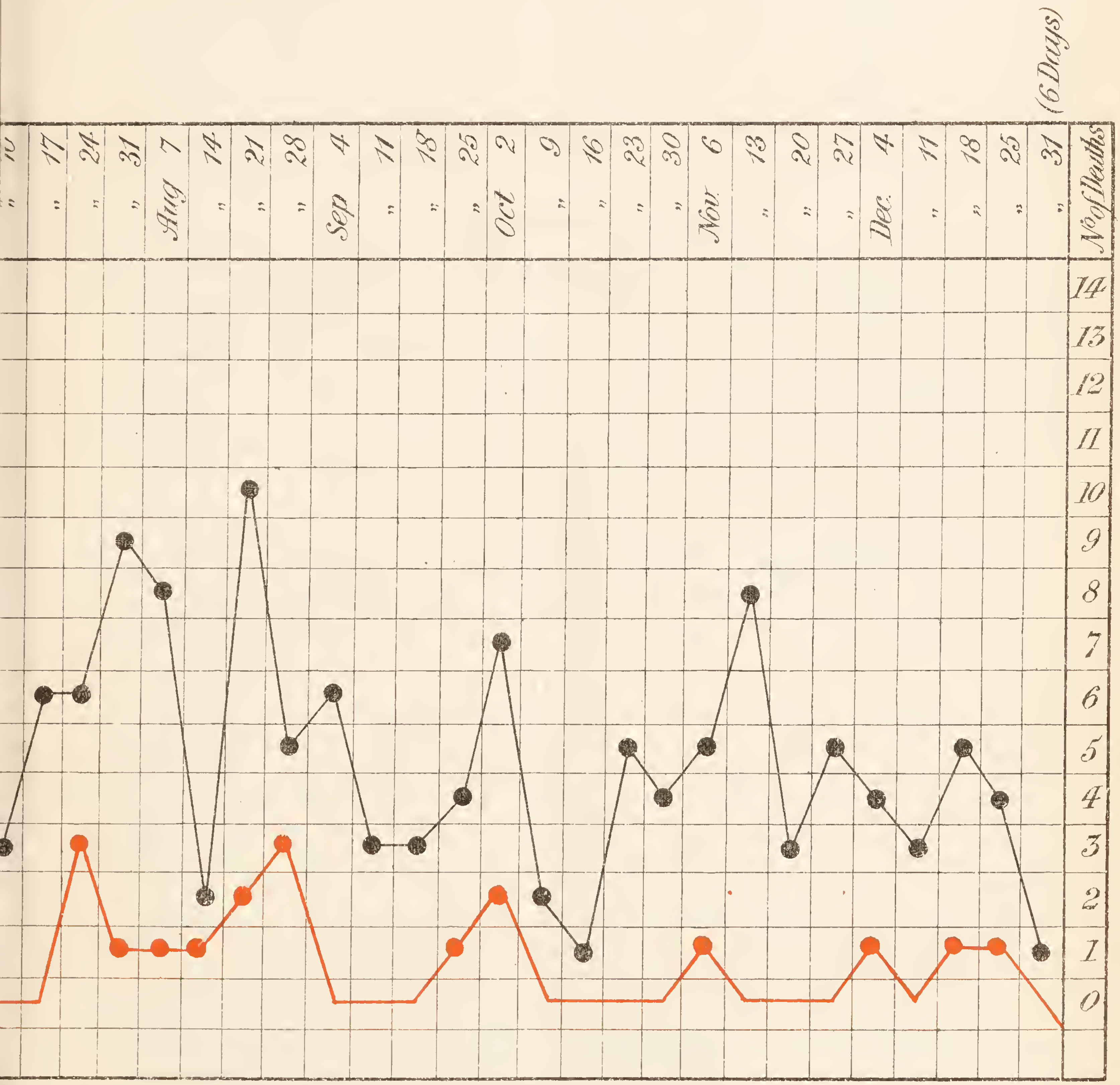
Black Ink indicates TOTAL DEATHS from all



F · KENDAL.

N · EACH · WEEK.

ses. —— Red Ink indicates ZYMOTIC Deaths.



BIRTH-RATE.

The total number of births registered was 378, against 392 in the previous year, and the birth-rate was therefore 25·35 per 1000 of the estimated population.

The births and birth-rates have been as follows :—

Year.	Births.	Birth-Rates.
1881-85	mean 455	32·8
1886-90	mean 422	29·6
1891-95	mean 420	28·7
1891	449	31·1
1892	415	28·5
1893	429	29·2
1894	387	26·3
1895	422	28·5
1896	392	26·4
1897	378	25·35

GENERAL MORTALITY.

The number of deaths registered in the Borough during the year 1897 was considerably greater than in 1896, but, as I observed a year ago, the number in 1896 was the lowest since civil registration commenced in 1837. Although there is an increase, the actual number is still below the mean number in any recorded quinquennial period. As will be seen by the table following title page, the three last quinquennial periods ending 1885, 1890 and 1895 respectively, give the several means 260, 259 and 260, but the past year is only 249.

Zymotic Mortality.—The number of deaths due to diseases of the zymotic class shows a considerable increase, namely, from 11 to 31, but last year (1896) the number was exceptionally low. For the purpose of comparison, reference may be made to the table following title page.

Mortality from Phthisis.—The mortality due to phthisis is a singular contrast to the zymotic mortality, for the number of deaths attributed to the disease was only eleven, as compared to twenty in 1896. Not only so, but it is only *one-half* the rate for the quinquennial period ending 1895, and fiom *one-fourth* up to *one-third* of the rates prevalent in previous quinquennial periods 1840 to 1890. It is easier to ask, what is the cause of this satisfactory result than it is to give an explanation capable of conclusive proof. I fear phthisis, or consumption as it is more commonly spoken of, is not yet popularly regarded as an infectious disease, as it ought to be, communicable from one person to another by minute particles passing into the lungs of healthy persons from the dried matter resulting from the expectoration of persons suffering from the disease. Undoubtedly with the improved financial position of the working classes, more wages and less to pay for food, there is engendered in the rising generation a pride in dress and outward appearance which, fortunately for their health, begets a pride in domestic environment, and they will no longer submit to live in an over-crowded cottage, with a minimum of light and fresh air, but betake themselves to modern buildings, many of which have been erected during the past eight years in various parts of the town. Any one who doubts this has only to look around and see where the empty houses in the Borough are situated. Of the 11 deaths attributed to phthisis, one was 14 years of age, seven between 20 and 30 years, two 34, and one 43 years of age. One was the wife of a shopkeeper, and the other ten were all of the weekly-wage class.

ANALYSIS OF THE DEATH-RATE.

Infant Mortality.—I regret to say that the improvement in the infant mortality recorded in 1896 was not maintained in 1897, the number of infant deaths having increased from 38 to 60, or over 50 per cent. ; and the infant mortality rate from 96 to 158 per 1000 births registered. By reference to Table III. on page 12, it will be seen the great increase was in the March and the September quarters of the year, when the zymotic deaths constituted no less than 16% and 19% of the total deaths registered in each respective quarter. During the 10 years ending 1890, the mean rate for England and Wales was 142 per 1000, and for the County of Westmorland 100 per 1000 registered births; but during the year 1897 the rate of mortality of infants has exceeded the mean rate of the 10 years ending 1890 (as will be seen by reference to Table I., column 10, on page 11), not only in the Borough of Kendal, but also in England and Wales generally and the County of Westmorland.

It is instructive to note the following rates of infant mortality in 1897 :—

	Per 1000 Births.
Borough of Kendal	158
County of Westmorland	113
,, ,, excluding the Borough of Kendal	98
Rural District of South Westmorland	81

Child Mortality.—Taking into account the deaths of all children under five years of age, it is seen that although the rate of mortality is very much higher than in 1896, it is still slightly below the mean rate for the five years ending 1895 (vide foot of page 9).

Adult Mortality.—The mortality of persons between the ages of five years and sixty-five years shows a satisfactory decrease as compared with any of the previous four years, the rate per 1000 estimated to be living at that age period having fallen to 6·5 (vide page 10).

OLD-AGE MORTALITY.—At this extreme of life we find a largely increased rate of mortality, namely, from 71·6 per 1000 estimated to be living in the age period in 1896, to 108·2 per 1000 in 1897.

Looked at as a whole the mortality of 1897 cannot be regarded as very unsatisfactory. It is true there has been a sacrifice of infant lives, but it is very gratifying to find a considerable saving in the lives of those of our population who are out of their babyhood and entered upon an educational career, coupled with those who are the nation's bread winners. Remembering that we all have to die, it is—reviewing the old-age mortality —matter for rejoicing that an immensely increased number are preserved to a green old age, thereby swelling the rate of mortality of persons belonging to that age-period.

Table I. on page 11 is interesting and instructive, as showing us wherein we excel or are excelled by our neighbours, near or further afield. It is only by making comparisons of this kind that we are enabled to ask ourselves why we are better or worse than our neighbours, and to seek out such means as fall within our grasp to secure improvement in our social and sanitary condition, the relief of pain and suffering, and the prolongation of life.

Tables II. and III. on page 12 show, quarter by quarter, the relative proportions of deaths of infants and young children to the deaths at all ages. In the March quarter we have an exceptionally large proportion of deaths of young children from diseases of the zymotic class not of the filth type, such as measles and whooping cough. The June quarter was remarkably free from zymotic deaths, whilst the September quarter again exhibits a very greatly increased proportion of deaths from zymotic causes which have their origin in filth. The December quarter shows very little mortality from zymotic disease, but the accustomed and reasonable increase of deaths from diseases of the respiratory organs.

The whole of the deaths from measles, whooping cough, diphtheria, or diarrhœa, amounting to *thirty* in all, were, with *one* single exception, amongst children under one year old.

Table V. gives the meteorology of the year, and in parallel column a classification of the causes of death month by month. The rainfall of the year was considerably above the average, the exceptionally wet months being March, April, August, September, and December, whilst January and July were considerably below the average rainfall.

Table VI. gives the mean temperature and the total rainfall month by month, with the number of deaths from the various diseases of the respiratory organs in parallel column.

DIARRHŒA.—The gratification with which I reported a year ago that the mortality due to this disease had declined to ·33 per 1000 of the population has been short-lived. This year it has risen to ·60 per 1000 of the population, and is therefore three times as great as the rate for the whole County of Westmorland, and four times as great as that for the Rural District of South Westmorland. With one exception the whole of the deaths were of children under one year old, whilst their social position may be gathered from the fact that only one was the child of a master tradesman, three were illegitimate, and the remaining five were of artisan parentage. Having mentioned the parentage of the deceased children, an enumeration of the localities in which they lived and died will excite no surprise. Omitting the child of the master tradesman, the whole of the remainder lived in localities where the houses are old, the air-space around them limited, the ceilings low, and the amount of direct sunlight also limited ; in fact in such localities as the higher-waged working classes will no longer live in, unless they happen to be of a thriftless nature. Although environment is evidently intimately connected with this mortality from diarrhœa, I fear there is another equally potent cause, and that is the ignorance of mothers as to the proper food for an infant a few months old, and the failure to observe that cleanliness in the storage, preparation, and administration of the food which is so necessary to its beneficial use. Such a subject is beyond the powers of the Medical Officer of Health, and I can only express the hope that means may be found amongst the middle and upper class female population of the Borough, either by the establishment of some society amongst themselves or otherwise, to seek to inculcate amongst the nursing mothers of the lower classes those lessons in domestic economy and organisation which it is quite evident they themselves possess, as is proved to me by the longevity of their own children.

BIRTH-RATE.

On reference to page 15 it will be seen that the birth-rate of the past year is the lowest recorded, being 1 per 1000 lower than the previous lowest recorded, which was in 1894, and more than 3 per 1000 lower than the mean rate of the five years ending 1895.

As a rule a low birth-rate is regarded as evidence of financial depression amongst the working classes of a district, provided that there is no evidence of any alteration in the age or sex distribution of the population, but in this district I am not aware that any such depression exists.

INFECTIOUS DISEASES.

The total number of cases of infectious disease notified to me under the provisions of the Infectious Disease (Notification) Act, 1889, or discovered by me, not notified, was 63, as against 45 in 1896. Table VII. shows the number of known cases of each infectious disease in each quarter of the year, the number removed to the Sanatorium and to the Memorial Hospital, the number treated at their own homes, and the number of deaths.

TABLE VII.—SCARLET-FEVER.

Quarter.	Known Cases.	Admitted to Sanatorium.	Treated at Home.	Deaths.
March	3	3	0	0
June	1	1	0	0
September	0	0	0	0
December	0	0	0	0
Total	4	4	0	0

DIPHTHERIA AND MEMBRANOUS CROUP.

Quarter.	Known Cases.	Admitted to Sanatorium.	Admitted to Memorial Hospital.	Treated at Home.	Deaths.
March	2	0	0	2	0
June	1	0	0	1	0
September	3	2	0	1	2
December	8	2	0	6	3
Total	14	4	0	10	5

TYPHOID OR ENTERIC-FEVER.

Quarter.	Known Cases.	Admitted to Sanatorium.	Admitted to Memorial Hospital.	Treated at Home.	Deaths.
March	6	6	0	0	0
June	0	0	0	0	0
September	6	5	0	1	1
December	7	7	0	0	0
Total	19	18	0	1	1

ERYSIPELAS.

Quarter.	Known Cases.	Admitted to Sanatorium.	Admitted to Memorial Hospital.	Treated at Home.	Deaths.
March	8	0	0	8	0
June	1	0	0	1	0
September	7	0	0	7	0
December	8	0	0	8	0
Total	24	0	0	24	0

To these must be added one case of continued fever, and one of puerperal fever.

Table VIII. shows the number of known cases of infectious disease in each of the past eight years, the Infectious Disease (Notification) Act, 1889, coming into operation in the Borough on the 10th of March, 1890.

TABLE VIII.

Year.	Smallpox	Scarlet Fever.	Diphtheria and Membranous Croup.	Enteric Fever.	Continued Fever.	Erysipelas.	Puerperal Fever.	Total.
1890	0	10	10	22	1	13	0	56
1891	0	41	5	39	1	23	2	111
1892	0	32	2	29	5	26	2	96
1893	2	186	3	51	4	36	2	284
1894	0	236	10	10	1	50	4	311
1895	0	71	5	11	1	28	2	118
1896	0	8	6	6	1	23	1	45
1897	0	4	14	19	1	24	1	63

The whole of the known cases in 1890, except two, were subsequent to the adoption of the Notification Act.

Scarlet Fever.—A glance at Table VIII. might lead us to believe that scarlet fever was about to become an extinct disease. It seems almost incredible that on *one day* in 1894 ten cases of scarlet fever should be notified, whilst there were only four in the whole year 1897. The first case notified was on the 3rd of March. The patient had been employed for two months as a cleaner in the Running Shed at Blackpool. On the 20th February he was taken ill, remained in bed several days, and on the 25th came to his father's house in Kendal. He was removed to the Sanatorium on March 3rd. A few days afterwards two cases were notified in the house next adjoining that in which the last-named patient lived (a yard in Highgate), and they also were removed to the Sanatorium. The fourth and last case was that of a little boy whose home was at Stafford, and who travelled from that town to Kendal on the 19th of June. No scarlet fever was known of in the locality where he lived, but he travelled in the same carriage from Warrington to Lancaster with three children, who were travelling with their mother from Dublin to Lancaster, and on the 23rd of June —the fourth day after his railway journey—the rash appeared.

Diphtheria and Membranous Croup.—The majority of these cases were in second or third-rate cottage houses ; in some cases grave insanitary conditions of drainage or the like were discovered, whilst in others the patients had associated with others who had had throat trouble not recognised as infectious, but in no case had I reason to suppose that the disease was contracted at any public elementary school.

Enteric Fever.—It is pleasing to record that, although the number of cases of this disease notified to me was larger than usual, there was only one death attributed to it. In January a case was notified in Ann

Street, and on inspection with smoke tester the house drain, which ran through a covered passage separating the patient's residence from the adjoining house, was found to be most defective. Although this drain had been constructed many years, and had not been disturbed in any way, no previous case of fever had been known in the house. There were several similar cases. In no case was the disease traceable, so far as I could ascertain, either to milk supply or to water supply. Three cases occurred in one house—the one fatal case was of these—and there was no wonder at infectious disease existing in such house : not only was it most seriously over-crowded, but absence of all pretence to cleanliness was most marked.

ABATEMENT OF NUISANCES.

During the past year a systematic inspection of the town, street by street, has been made by sub-committees appointed by the Health Committee from its own body. As a result of this a large number of improvements have been carried out, the personal influence of members of the Committee being, in many cases, operative in inducing owners to carry out alterations which might otherwise have had to be enforced before Justices.

I am still of opinion that a house to house inspection would detect many conditions prejudicial to health, which are now only observed when infectious sickness is notified on the premises. The report of such inspection ought to be recorded in a properly prepared book, in the same way as a business man records his transactions in an analysis cash book.

During the last three years many fixed receptacles for ashes, &c., have been done away with and covered iron bins substituted, the latter being emptied twice in each week by the scavengers of the Corporation. In the course of my inspections I have frequently found large quantities of ashes and filth in ashpits, such having accumulated during several months, and more particularly in ashpits used by the occupiers of several houses. Every such occupier ought to report the ashpit for emptying, but what every body ought to do nobody accomplishes. The Corporation does not keep a staff of inspectors to prevent such accumulations, and therefore there is but one practicable way to secure the desired end, namely, for certain dates in each month to be fixed for the emptying of certain ashpits, no matter whether they are full, or only one-fourth full. To say that this cannot be done, and done at less expense than under the present want of system, is absurd, for it stands to reason that if a gang of men are employed emptying every ashpit in a street, it must cost less than if they spend their time walking about between six different ashpits situated in six different streets.

SANATORIUM.

There were three patients in residence on the night of the 31st December, 1896, fifty were admitted during the year, and six remained under treatment on the 31st December, 1897. Of the fifty-three cases treated during the year, twenty-three were from districts other than the Borough of Kendal.

The following Table shows the number of patients treated during the year, where they came from, and from what disease they suffered :—

Month.	Scarlet Fever.	Enteric Fever.	Diphtheria.	Number of patients admitted.	Number of patients' days.	Mean number of patients in residence.
Prior to Jan. 1, '97	2	1 (S.W.) ...	...	3	85*	4·5
January ...	1 (S.W.) ...	2	...	3	54	
February ...	...	...	...	0	115*	4·1
March ...	5 (2 S.W.) ...	4	...	9	193*	6·2
April ...	2 (S.W.) ...	...	...	2	242*	8·0
May ...	...	...	...	0	121	4·0
June ...	3 (2 S.W.) ...	...	...	3	41	1·3
July ...	...	2 (1 S.W.)	2 ...	4	141	4·5
August ...	...	1	...	1	30	1·0
September ...	1 (S.W.) ...	3	...	4	70	2·3
October ...	5 (4 W.) (1 S.W.) ...	8 (1 S.W.) (1 L.)	2 (1 SW)	15	291	9·4
November ...	2 (1 W.) (1 S.W.) ...	1 (S.W.) ...	2 (1 SW)	5	324	10·8
December ...	1 (S.W.) ...	2 (1 S.W.)	1 ...	4	174	5·6
Totals ...	22 (10 S.W. (5 W.)	24 (5 S.W.) (1 L.)	7 (2 SW)	53	1881	5·1

* Includes cases admitted prior to January 1st, 1897.

In the above table the following abbreviations are used :—

W. = Urban District of Windermere.
S.W. = Rural District of South Westmorland.
L. = Rural District of Lunesdale.

The Inspector of Nuisances furnishes the following return :—

Nuisance Removal.—Ashpits and privies foul and out of repair, 126; Ashpits and privies against housewalls, 2 ; Pigs kept so as to be a nuisance, 1 ; Houses declared unfit for habitation, 3 ; Accumulation of manure, 1 ; Privies converted into Hopper Closets, 59 ; Privies converted into Pail Closets, 15 ; Privies converted into Duckett's Waste Water Closets, 14.

Drainage.—Drains choked up, leaking, &c., 7 ; Slopstone pipe connected with drain, 3 ; Number of Drains tested during the year, 30.

Water Supply.—Improvements and newly made supplies, 85; Houses supplied with water from Waterworks in lieu of Pump, 12.

Overcrowding.—Number of cases, 3: No. 35, Windermere Road; No. 3, Yard 13, Sepulchre Lane; No. 3, Yard 27, Far Cross Bank.

Bakehouses.—Inspected twice.

Slaughter Houses.—Regularly inspected; No. of seizures made, 3.

Common Lodging Houses.—Inspected regularly.

Disinfection.—Houses disinfected after infectious disease, 28; Articles disinfected in disinfecting stove: Rural 152, Urban 1134.

Canal Boats inspected, 19.

MUSGRAVE CRAVEN, D.P.H., Camb.,
Medical Officer of Health.

Kendal, June, 1898.